REMARKS

Claims 1, 2 and 5-14 are pending in the application. Claims 3 and 4 stand canceled. Claim 1 was amended to more particularly point out and distinctly claim the present invention. Claims 2, 7 and 9 were amended to further define the present invention.

No new matter was entered. The new language in claim 1 is fully disclosed in Fig. 1 and on page 8, line 24 through page 9, line 4 of the original specification.

For at least the reasons set forth below, withdrawal of all outstanding rejections is respectfully requested.

35 U.S.C. § 112, second paragraph, rejection

Claims 7 and 9 were amended to address the antecedent basis issues.

Prior Art Rejections

Claims 1-3 and 5-14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,055,342 (Yi et al., hereafter "Yi") and a reference which the Examiner refers to as "Yoshinori" which Applicants believe refers to Japanese Patent Application Laid-Open Publication No. 11-024117.

1. Patentability of independent claim 7 over Yi and Yoshinori

Claim 1, as amended, recites, *inter alia* (underlining added for emphasis):

> an optical waveguide for receiving and propagating an optical signal that has been modulated so as to have a side band represented by:
>
> $$\lambda_{sb} = \lambda_C+\Delta\lambda$$
> $$\Delta\lambda = \lambda_C-(C\lambda_C/(C+f_m\pi)) = f_m\lambda_C^2/(C+f_m\lambda_C)$$
>
> where f_m is the frequency in Hertz (Hz) of the modulating signal, λ_{sb} is a wavelength at which the side band generates, C is the velocity of light, and λ_c is the center frequency of the light; and
>
> a pair of electrodes disposed within a region where an electric field applies, said <u>electric field being generated in the optical waveguide by a nonlinear optical effect when the optical signal propagates through the optical waveguide</u>,
>
> ... wherein when the optical signal is incident on the side surface of

> the dielectric substrate, a variation in the electric field generated in the optical waveguide is output as an electrical signal from the pair of electrodes.

Amended claim 1 recites that an electric field is generated in the optical waveguide by a nonlinear optical effect when the optical signal propagates through the optical waveguide and that a variation in the electric field generated in the optical waveguide is output as an electrical signal from a pair of electrodes. These limitations are not disclosed or suggested in Yi or Yoshinori.

The Examiner states that Fig. 2 and column 3, line 60 through column 4, line 30 of Yi discloses a waveguide 204 which is capable of receiving and propagating a modulated optical signal and a pair of grounds 208 disposed on a top surface of a substrate opposite each other sandwiching the waveguide and capable applying an electric field in the waveguide by a nonlinear effect and experiencing a change in electric field in the waveguide, as recited in claim 1 of the present application.

Yi discloses an optical intensity modulator (column 1, lines 8-9), which converts an electrical signal applied between electrode 206 and grounds 208 into an optical signal. Thus, in the invention of Yi, a voltage is applied to the electrodes to generate an electric field in an optical waveguide in order to modulate the light-waves in the waveguide (column 1, lines 19-22).

This is not the same (and in fact is the opposite) as the claimed optical signal to electrical signal converter (demodulator) of the present application, where claim 1 recites that an electric field is generated in the optical waveguide by a nonlinear optical effect when the optical signal propagates through the optical waveguide. For this reason, Yi does not disclose or suggest the invention recited in amended claim 1.

Additionally, the pair of grounds 208 of Yi does not output a variation in an electric field generated in the optical waveguide as an electrical signal from the pair, as recited in amended claim 1. The grounds 208 disclosed in Yi are used in conjunction with the electrode 206 in order to apply an electric field to the optical waveguide 204 (column3, lines 63-64). Because both of the grounds 208 in Yi are grounds, they inherently have the same voltage level. It would be impossible for the grounds 208 to generate any type of electric field, detect any type of variation in existing electric field, or output an of electric signal. Thus, the grounds 208 disclosed in Yi

cannot output a variation in the electric field generated in the optical waveguide as an electrical signal as recited in amended claim 1. For this additional reason, Yi does not disclose or suggest the invention recited in amended claim 1.

Yoshinori simply discloses a radio wave generator that generates a radio wave of a frequency equal to the frequency difference between to light beams. Yoshinori does not make up for the deficiencies in Yi.

Accordingly, claim 1 is believed to be patentable over the applied references.

2. Patentability of the dependent claims

The dependent claims are believed to be patentable over the applied references for at least the reason that they are dependent upon allowable base claims and because they recite additional patentable elements and steps.

Conclusion

Insofar as the Examiner's rejections were fully addressed, the present application is in condition for allowance. Issuance of a Notice of Allowability of all pending claims is therefore requested.

Respectfully submitted,

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